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August 27, 2008

10 CFR 50.4

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Palisades Nuclear Plant
Docket 50-255
License No. DPR-20

Commitments to Address Degraded Spent Fuel Pool Storage Rack Neutron Absorber

Dear Sir or Madam:

Entergy Nuclear Operations, Inc. (ENO) personnel recently discovered that the Palisades Nuclear Plant region I spent fuel pool storage racks contain less neutron absorber material than assumed in the spent fuel pool criticality analysis of record. This represents a noncompliance with Technical Specification 4.3.1.1.b. This incident will be reported in accordance with 10 CFR 50.73 in Licensee Event Report 08-004 by September 15, 2008, as a condition prohibited by Technical Specifications. This condition also represents a noncompliance with 10 CFR 50.68.

Enclosure 1 discusses the degraded spent fuel pool neutron absorber material.

To address this condition, ENO is implementing actions to ensure that the fuel assemblies within the spent fuel pool continue to remain in a subcritical condition.

Summary of Commitments

1. ENO will prohibit the movement of fuel assemblies within the spent fuel pool that involve positive reactivity changes until fuel storage requirements in Technical Specifications, 10 CFR 50.68, and the updated final safety analysis report are met.
2. ENO will prohibit the movement of fuel assemblies within the spent fuel pool that involve negative reactivity changes until the Nuclear Regulatory Commission has concurred with the planned fuel movement.
3. ENO will continue to maintain the spent fuel pool between 75°F and 125°F during normal operation in accordance with plant procedures.

4. ENO will maintain spent fuel pool boron concentration greater than 2550 ppm at all times.

Absent any requested fuel moves, these actions will remain in effect until compliance with requirements in Technical Specification 4.3.1.1.b, 10 CFR 50.68, and the updated final safety analysis report is established.

I declare under penalty of perjury that the foregoing is true and correct. Executed on August 27, 2008.

A handwritten signature in black ink, appearing to read "C. Schwarz", with a horizontal line extending to the right.

Christopher J. Schwarz
Site Vice President
Palisades Nuclear Plant

Enclosure

CC Administrator, Region III, USNRC
Project Manager, Palisades, USNRC
Resident Inspector, Palisades, USNRC

ENCLOSURE 1
DEGRADED SPENT FUEL POOL STORAGE RACK
NEUTRON ABSORBER MATERIAL

Background

In July 2008, Entergy Nuclear Operations, Inc. (ENO) personnel discovered that the Palisades Nuclear Plant (PNP) region I spent fuel pool storage racks contain less neutron absorber material than assumed in the spent fuel pool criticality analysis of record. This neutron absorber material is relied on to maintain the region 1 spent fuel pool storage racks within the Technical Specification 4.3.1.1.b criticality requirements. The Technical Specification reflects credit for the neutron absorber material, rather than soluble boron, in maintaining spent fuel pool criticality within limits.

The degradation of neutron absorption material in region 1 was discovered during "blackness testing." This testing was conducted as a corrective action to assess the effect of previously observed fuel cell wall swelling in region 1 racks on the spent fuel pool criticality analysis. A review of the test data indicated that at least half of the neutron absorber material remains in the racks.

A spent fuel pool criticality operability assessment concluded that, with credit taken for about half of the neutron absorber and a small amount of fuel burnup, a soluble boron concentration of 150 ppm is required to maintain a K_{eff} less than or equal to 0.95 in the region 1 racks based on the most reactive fuel that has been used at the PNP. At the time of discovery, spent fuel pool boron concentration was 2732 ppm and the plant was operating in Mode 1. Technical Specification 4.3.1.1.b requires that K_{eff} for region 1 fuel racks be less than or equal to 0.95 if fully flooded with unborated water. With soluble boron required to maintain K_{eff} less than or equal to 0.95 in the region 1 fuel racks assuming nominal enrichment, PNP no longer complies with this Technical Specification.

PNP also no longer complies with 10 CFR 50.68(a)(4). This regulation states that, if no credit is taken for soluble boron, K_{eff} must not exceed 0.95 at a 95 percent probability, 95 percent confidence level with maximum fuel assembly reactivity if flooded with unborated water.

Technical Specification 3.7.15 requires that spent fuel pool boron concentration be maintained greater than or equal to 1720 ppm when fuel assemblies are stored in the pool. This is based on crediting soluble boron for the region 2 storage racks. The PNP current licensing basis does not address soluble boron credit for region 1. Therefore, ENO considers Technical Specification 3.7.15 to be nonconservative in accordance with Nuclear Regulatory Commission (NRC) Administrative Letter 98-10, "Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety." ENO implemented compensatory measures that included maintaining a boron concentration higher than the minimum required in Technical Specification 3.7.15 until the nonconformance is resolved.

Immediate Actions

The degraded neutron absorber material did not involve an immediate operability concern at the time of discovery because the spent fuel pool boron concentration was 2732 ppm, which was well above the required boron concentration to maintain K_{eff} less than 0.95. In addition, plant procedures required that spent fuel pool boron concentration be maintained at a minimum of 2550 ppm in Modes 1 through 4. In Modes 5 and 6, only 1800 ppm was required. A past operability evaluation confirmed that spent fuel pool boron concentration had been maintained greater than 2550 ppm in recent years.

To address this condition, the following immediate actions were implemented:

1. The movement of fuel assemblies within the spent fuel pool is prohibited.
2. Spent fuel pool boron concentration will be maintained greater than 2550 ppm at all times.

Commitments

ENO recognizes the importance of implementing actions to manage spent fuel pool reactivity and that it is important to communicate planned fuel movements with the NRC until the issue is resolved.

Therefore, ENO makes the following commitments:

1. ENO will prohibit the movement of fuel assemblies within the spent fuel pool that involve positive reactivity changes until fuel storage requirements in Technical Specifications, 10 CFR 50.68, and the updated final safety analysis report are met.
2. ENO will prohibit the movement of fuel assemblies within the spent fuel pool that involve negative reactivity changes until the NRC has concurred with the planned change.
3. ENO will continue to maintain the spent fuel pool between 75°F and 125°F during normal operation in accordance with plant procedures.
4. ENO will maintain spent fuel pool boron concentration greater than 2550 ppm at all times.

Corrective Actions

ENO plans to complete the following actions to resolve the issue:

Action	Target date
Develop contract for vendor criticality analysis	In progress
Review assumptions in criticality analysis of record	10/2008
Review and accept vendor test report for rack material	10/2008
Vendor criticality analysis complete (includes owner acceptance review)	5/2009
Submit license amendment request for revised criticality requirements	7/2009
NRC approves license amendment	7/2010
Implement license amendment to support 2010 refueling outage	8/2010

ENO is planning a refueling outage in 2009. Due to the commitments in this letter, it will be necessary to request NRC approval for an action to support 2009 refueling outage activities. ENO is investigating appropriate restrictions in the spent fuel pool that would apply to these activities, recognizing that the normal NRC review time will not be met. To support this request, ENO is evaluating options that would simplify the NRC review, such as using a restrictive fuel storage pattern or not crediting soluble boron. The following actions are planned:

Action	Target date
Develop contract for vendor criticality analysis	In progress
Vendor criticality analysis complete (includes owner acceptance review)	11/2008
Submit license amendment request for revised criticality requirements	11/26/2008
NRC approves license amendment	2/13/2009
Implement license amendment (date may vary depending on need to move fuel to achieve proposed loading pattern)	2/18/2009